

A further study on the species of the spider family Agelenidae from China (Arachnida: Araneae)

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A further study on the species of the spider family Agelenidae from China (Arachnida: Araneae). - Six agelenid spider species belonging to the genera *Agelena*, *Ageleradix* and *Benoitia* occurring in China are diagnosed, described and illustrated. The name *Agelena micropunctala* Wang, 1992 is placed in the synonymy of *Agelena poliosata* Wang, 1991; *Agelena otiforma* Wang, 1991 is transferred to the genus *Ageleradix*; *Benoitia agraulosa* (Wang & Wang, 1990) is newly reported from Xinjiang Province of China. Three new species are described: *Ageleradix schwendingeri* sp. n., *Ageleradix sternseptum* sp. n. and *Ageleradix zhishengi* sp. n.

Keywords: Taxonomy - new species - new synonymy - new combination - funnel-webs.

INTRODUCTION

Spiders of the family Agelenidae C. L. Koch, 1837, which construct conspicuous funnel-webs, are common inhabitants of the vegetation in China. According to Platnick's spider catalogue (2007), Agelenidae spiders are now represented by 41 genera and 508 species worldwide, and by 6 genera (*i.e.*, *Agelena* Walckenaer, 1805; *Ageleradix* Xu & Li, 2007; *Allagelena* Zhang, Zhu & Song, 2006; *Benoitia* Lehtinen, 1967; *Huangyuania* Song & Li, 1990; and *Tegenaria* Latreille, 1804) and 23 species occurring in China. A re-examination of the type material of the agelenid species known from China is becoming more and more important because some of the original descriptions do not provide sufficient information to meet the current requirements for species identification and phylogenetic evaluation. The current study aims to provide more information on type material of the known agelenid species in China, and it presents three new species.

MATERIAL AND METHODS

All specimens treated in the current paper are deposited in the Institute of Zoology, Chinese Academy of Sciences, Beijing, China (IZCAS), in the Hunan Biological Institute, Changsha, China (HBI) and in the Muséum d'histoire naturelle de la Ville de Genève, Switzerland (MHNG). Specimens were examined and measured under an SZ40-Olympus stereomicroscope; details were studied under an Olympus

BX40 compound microscope. All illustrations were made using a drawing tube. Male palp and female epigynum were examined and illustrated after they were separated from the spider's body, the vulva was examined after being macerated in lactic acid for about 12 hours. For examination of the genital structures under transmitted light microscopy, male palp and female epigynum were immersed in 75% alcohol.

All measurements are given in millimeters. Leg measurements are shown as: Total length (femur, patella and tibia, metatarsus, tarsus). The terms used in the description of genitalia follow Wang (1997, 2002), Zhang, Zhu & Song (2006) and Xu & Li (2007). Abbreviations used in the text are: A = atrium; AER = anterior eye row; ALE = anterior lateral eye; ALS = anterior lateral spinneret; AME = anterior median eye; C = conductor; CB = copulatory bursa; D = diverticula; E = embolus; FD = fertilization duct; LTA = lateral tibial apophysis; MA = median apophysis; MOA = median ocular quadrangle; MOA-L = length of MOA; MOA-WA = anterior width of MOA; MOA-WP = posterior width of MOA; PA = patellar apophysis; PER = posterior eye row; PLE = posterior lateral eye; PLS = posterior lateral spinneret; PME = posterior median eye; PMS = posterior median spinneret; R = radix; RTA = retrolateral tibial apophysis; S = spermatheca; SA = spermathecal apophysis; ST = subtegulum; T = tegulum; TP = tegular process.

TAXONOMY

Agelena poliosata Wang, 1991

Figs 1-3

Agelena poliosata Wang, 1991: 411, figs 24-25. – Chen & Zhao, 1998: 3, figs 2.1-2. – Song, Zhu & Chen, 1999: 354, fig. 205O-P.

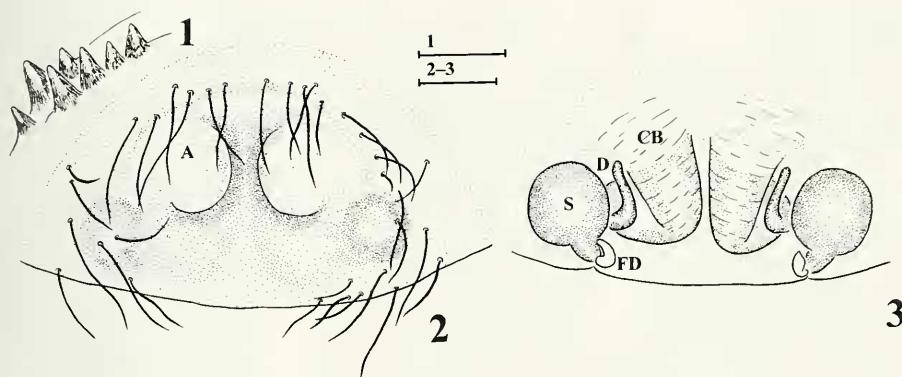
Agelena micropunctulata Wang, 1992: 288, figs 11-12, **syn. n.** – Song, Zhu & Chen, 1999: 354, fig. 205J-K.

TYPE MATERIAL EXAMINED: ♀ holotype (HBI) of *Agelena poliosata* Wang, 1991: Mt Tianmushan (30.4° N, 119.5° E), Zhejiang Province, China, collected by Jiafu Wang, October, 1979. ♀ holotype (HBI) of *A. micropunctulata* Wang, 1992: Sangang County (27.7° N, 117.6° E), Fujian Province, China, collected by Jiafu Wang, 20 July, 1986.

OTHER MATERIAL EXAMINED: 1 ♀ (IZCAS), Mt Tianmushan, Zhejiang Province, collector unknown, 12-17 October 1974. – 3 ♀ (MHNG), same locality as for the preceding, collector unknown, 12 October 1976. – 1 ♀ (IZCAS), Mt Huangshan (29.7° N, 118.3° E), Anhui Province, collector unknown, 27 October 1974. – 1 ♀ (IZCAS), Hongchunping Town, Mt Emeishan (29.6° N, 103.5° E), Sichuan Province, collector unknown, 24 September 1975.

DIAGNOSIS: Females of this species are similar to those of *A. limbata*, but can be distinguished by the different shape of their genital atrium and copulatory bursa (Figs 2-3).

DESCRIPTION: Female (holotype). Total length 10.00; carapace length 3.50, width 2.60; abdomen length 7.00, width 3.80. Anterior eye row and posterior eye row procurred in dorsal view. Eye measurements: AME 0.24; ALE 0.20; PME 0.20; PLE 0.21; AME-AME 0.12; AME-ALE 0.03; ALE-PLE 0.03; PME-PME 0.22; PME-PLE 0.17; MOA-L 0.60; MOA-WA 0.52; MOA-WP 0.58. Carapace yellow-brown; cervical groove and radial grooves black-brown; fovea short, slightly depressed. Each chelicera with 3 promarginal and 4 retromarginal teeth (Fig. 1). Maxillae and labium yellow-brown, labium wider than long. Sternum with slightly pointed posterior end only slightly inserted between coxae IV. Median and distal portion of leg femora and tibiae



FIGS 1-3

Agelena poliosata Wang, female. (1) Cheliceral teeth, left side. (2) Epigynum, ventral view. (3) Vulva, dorsal view. Scale bars: 0.2 mm.

with brown annulus. Leg formula (from longest to shortest): IV, I, II, III; leg measurements: I: 12.30 ($3.50 + 4.10 + 3.00 + 1.70$); II: 11.00 ($3.10 + 3.70 + 2.60 + 1.60$); III: 10.70 ($3.20 + 3.40 + 2.60 + 1.50$); IV: 13.60 ($3.80 + 4.50 + 3.80 + 1.50$). Abdomen ovoid. Dorsal side of abdomen gray; cardiac mark black; posterodorsal part of abdomen with several indistinct yellowish chevron-like markings; ventral side of abdomen without pattern. Apical segment of PLS about 1.8 times longer than basal segment. Epigynum (Figs 2-3) with median septum; atria separated by median septum and situated anteriorly on epigynum; copulatory bursa slightly shaped like the letter "L", with digitiform diverticula; spermathecae red-brown and round (Figs 2-3).

Male. Unknown.

VARIATION: The total length varies from 10.00 to 12.30 in females examined ($n = 8$).

DISTRIBUTION: China: Anhui, Fujian, Sichuan, Zhejiang (Map 1).

Ageleradix otiforma (Wang, 1991) comb. n.

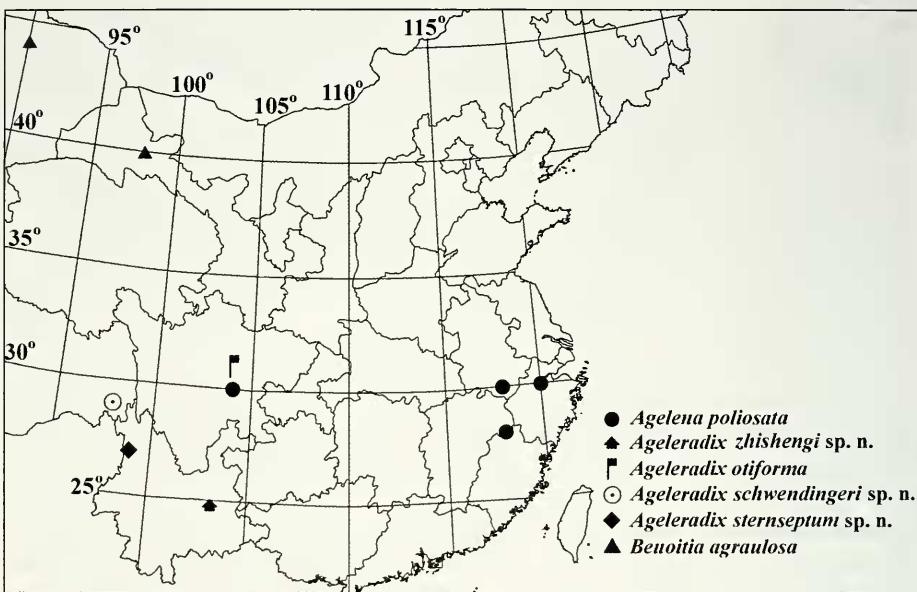
Figs 4-9

Agelena otiforma Wang, 1991: 409, figs 16-20. – Song, Zhu & Chen, 1999: 354, figs 205M-N, 206K, 207C.

TYPE MATERIAL EXAMINED: ♀ holotype (HBI); Sichuan Province, China, collected by Zhongming Luo, July 1981. – Paratypes; 2 ♂ (HBI), same data as for the holotype.

DIAGNOSIS: Females of this species can be recognized from those of other species by the tongue-shaped median septum, the strongly curved copulatory bursa, the shape of spermathecae and the position of the diverticulum (Fig. 9), and males by the brush-shaped distal end of the elongated conductor, the strongly modified radix (forming a cavity and with 2 apophyses), and the relatively long and slender embolus (Figs 4-6).

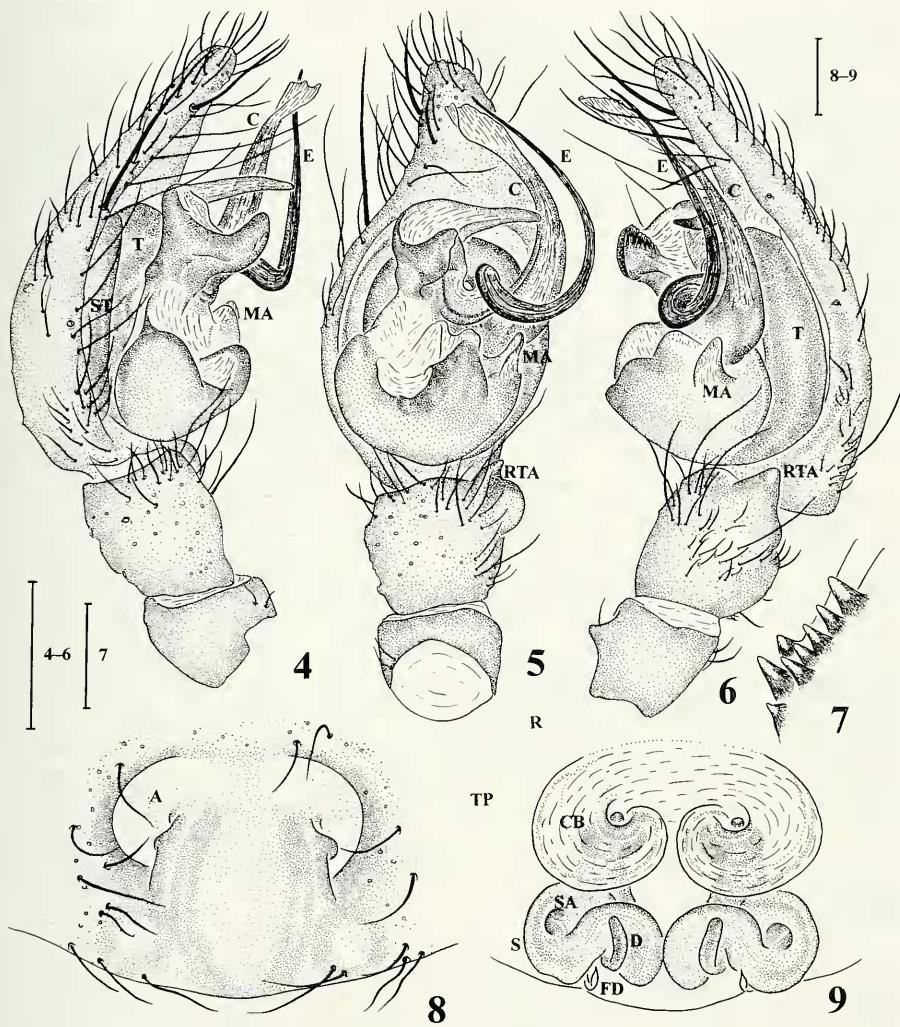
DESCRIPTION: Female (holotype). Total length 7.50. Carapace length 3.40, width 2.40; abdomen length 4.30, width 2.50. Anterior eye row and posterior eye row strongly procurved in dorsal view. Eye measurements: AME 0.20; ALE 0.18; PME 0.18; PLE 0.18; AME-AME 0.06; AME-ALE 0.03; ALE-PLE 0.03; PME-PME 0.17; PME-PLE 0.14; MOA-L 0.54; MOA-WA 0.46; MOA-WP 0.52. Carapace yellow-



MAP 1
Locality records for seven agelenid spider species in China.

brown, with brown margin. Each chelicera with 3 promarginal and 4 retromarginal teeth. Maxillae and labium light brown, labium wider than long. Sternum brown, covered with white fuzz and long brown hair. Basal and median portion of leg femora and tibiae with yellow-brown annulus. Leg formula (from longest to shortest): IV, I, II, III; leg measurements: I: 10.80 (2.50 + 3.90 + 2.70 + 1.70); II: 9.90 (2.50 + 3.60 + 2.30 + 1.50); III: 9.60 (2.60 + 3.30 + 2.50 + 1.30); IV: 13.60 (3.70 + 4.20 + 3.80 + 1.90). Dorsal side of abdomen brown, cardiac mark mauve and with white margin; posterodorsal part of abdomen with 5 yellowish chevron-like markings; ventral side of abdomen with 2 brown longitudinal markings between epigastric groove and spinnerets. Apical segment of PLS about 1.45 times longer than basal segment. Epigynum (Figs 8-9) with a tongue-shaped median septum; anterior part of vulva in the shape of two ears; spermathecae moderately large, copulatory bursa strongly curved, diverticula resting in a bend of the sigmoid spermathecae.

Male (paratype). Total length 7.30; carapace length 3.30, width 2.50; abdomen length 4.20, width 2.60. Eye measurements: AME 0.22; ALE 0.24; PME 0.17; PLE 0.24; AME-AME 0.03; AME-ALE 0.03; ALE-PLE 0.03; PME-PME 0.18; PME-PLE 0.12; MOA-L 0.54; MOA-WA 0.48; MOA-WP 0.54. Leg measurements: I: 14.88 (3.90 + 4.98 + 3.72 + 2.28); II: 13.74 (3.72 + 4.20 + 3.72 + 2.10); III: 13.50 (3.66 + 4.02 + 3.90 + 1.92); IV: 17.28 (4.56 + 4.74 + 5.40 + 2.58). Each chelicera with 3 promarginal and 5 retromarginal teeth (Fig. 7). Palp (Figs 4-6) without patellar apophysis; retro-lateral tibial apophysis small, with distal end beak-shaped in ventral view; tegulum with processes; conductor slightly curved; embolus originating subapically, moderately long and slender; median apophysis small.



FIGS 4-9

Ageleradix otiforma (Wang). (4-6) Palp of male, left side. (4) Prolateral view. (5) Ventral view. (6) Retrolateral view. (7) Cheliceral teeth of male, left side. (8-9) Female genitalia. (8) Epigynum, ventral view. (9) Vulva, dorsal view. Scale bars: 4-6, 0.5 mm; 7-9, 0.2 mm.

VARIATION: The total length in the two males examined is 7.15 and 7.30.

DISTRIBUTION: China: Sichuan (Map 1).

Ageleradix schwendingeri sp. n.

Figs 10-16

HOLOTYPE ♂ (MHNG): Xiazayü, Zayü County (28.6° N, 97.4° E), Tibet, China, collected by Xiao'en Chen and Junchuan Gao, 8 July 1981.

PARATYPE: 1 ♀ (MHNG), Kangga Town, Litang County (30.0° N, 100.2° E), Sichuan, China, 5 June 1982.

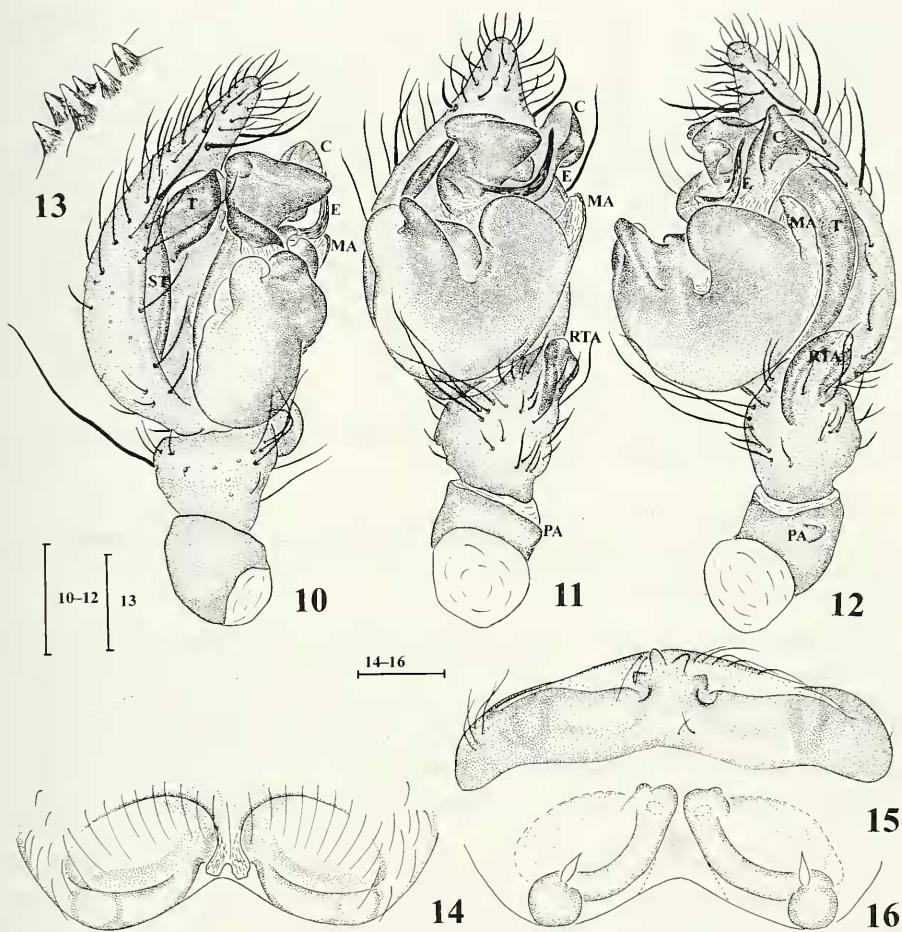
ETYMOLOGY: The new species is named in honor of Dr Peter J. Schwendinger (MHNG) for his contribution to arachnology.

DIAGNOSIS: The male of this species can be distinguished from those of other species by its short, anteriorly situated conductor, its slightly bifid tegulum process and its strong radix (Figs 10-12), and the female by the presence of an epigynal tooth, a deep cavity on the posterior edge of the epigynum and distinctive spermathecal stalks (Figs 14-16).

DESCRIPTION: Male (holotype). Total length 7.30; carapace length 3.60, width 2.60; abdomen length 3.70, width 2.00. Anterior eye row and posterior eye row procurved in dorsal view. Eye measurements: AME 0.18; ALE 0.23; PME 0.18; PLE 0.23; AME-AME 0.05; AME-ALE close to each other; ALE-PLE close to each other; PME-PME 0.10; PME-PLE 0.10; MOA-L 0.53; MOA-WA 0.33; MOA-WP 0.45. Carapace brown, with black margin and yellow-brown submargin. Head region clearly narrower than thorax region. Cervical groove and radial grooves black. Fovea longitudinal, long. Chelicerae red-brown, each with 3 promarginal and 3 retromarginal teeth (Fig. 13). Maxillae and labium brown, labium longer than wide. Sternum gray, with distal end slightly rounded, not very sharp. Leg brown, leg formula (from longest to shortest): IV, I, II, III; leg measurements: I: 14.85 (4.50 + 4.70 + 3.55 + 2.10); II: 13.45 (3.90 + 4.25 + 3.40 + 1.90); III: 12.40 (3.60 + 3.80 + 3.40 + 1.60); IV: 16.10 (4.10 + 5.00 + 4.80 + 2.20). Dorsal side of abdomen nut-brown, color of central region lighter than that of lateral region. Ventral side of abdomen with a line of light dots along each side. Colulus reduced to a tiny plate covered with several setae. ALS slightly longer than the basal segment of PLS. Apical segment of PLS about 1.3 times longer than that of basal segment. Palp (Figs 10-12) with small patellar apophysis; tegular process bifid, situated prolaterally on the tegulum; conductor strong and forming a moderate concavity; embolus short and sharp, originating subapically, in concavity of conductor; stout radix with several blunt apophyses; median apophysis wide and situated retro-laterally on the bulb.

Female (paratype). Total length 7.00, carapace 3.00 long, 2.27 wide, abdomen 4.00 long, 2.53 wide. AER and PER strongly procurved. AME 0.13, ALE 0.20, PME 0.14, PLE 0.19; AME-AME 0.10, AME-ALE 0.08, PME-PME 0.13, PME-PLE 0.13, ALE-PLE 0.13; MOA-L 0.50, MOA-WA 0.33, MOA-WP 0.40. Carapace yellow-brown, with light yellow submargin and black margin. Cervical groove and radial grooves distinct, black-brown. Head region slightly narrower than thorax region. Fovea long and moderately deep. Chelicera with 3 promarginal and 3 retromarginal teeth. Legs yellow-brown, metatarsi and tarsi with trichobothria. Leg formula: IV, I, II, III; leg measurements: I: 10.03 (2.75, 3.25, 2.50, 1.53); II: 8.76 (2.50, 2.88, 2.13, 1.25); III: 8.63 (2.38, 2.75, 2.25, 1.25); IV: 11.76 (3.13, 3.63, 3.50, 1.50).

Abdomen dorsally with the indistinct cardiac pattern, a few scattered light dots and several chevrons. ALS strong, widely separated, about one third of the diameter of ALS. PLS about twice as long as ALS. Apical segment of PLS slender and sharp, about as long as basal segment. Epigynum in ventral view with a longitudinal septum, atrium divided into two inclined ellipses; posterior edge of the epigynum strongly indented; a single epigynal tooth with fishtail-shaped tip situated on the septum. Two small and



FIGS 10-16

Ageleradix schwendingeri sp. n. (10-12) Palp of male, left side. (10) Prolateral view. (11) Ventral view. (12) Retrolateral view. (13) Cheliceral teeth of male, left side. (14-16) Female genitalia. (14) Epigynum, ventral view. (15) Epigynum, posterior view. (16) Vulva, dorsal view. Scale bars: 10-12, 0.5 mm; 13, 0.2 mm; 14-16, 0.1 mm.

slightly pointed apophyses visible near the epigynal tooth in posterior view. Spermathecal heads in dorsal view small; spermathecae with round, widely separated bases and elongated, anteriorly converging stalks (Figs 14-16).

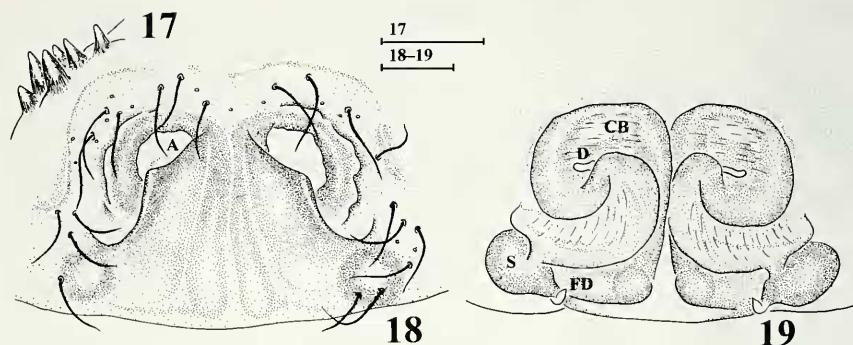
DISTRIBUTION: China: Tibet, Sichuan (Map 1).

Ageleradix sternseptum sp. n.

Figs 17-19

HOLOTYPE ♀ (IZCAS): Judian Town, Lijiang County (27.2° N, 99.4° E), Yunnan Province, China, collected by Jinwen Shang, 13 July 1981.

ETYMOLOGY: This species name, a noun in apposition, refers to the shape of the median septum of the epigynum.



FIGS 17-19

Ageleradix sternseptum sp. n. (17) Cheliceral teeth of female, left side. (18) Epigynum, ventral view. (19) Vulva, dorsal view. Scale bars: 0.2 mm.

DIAGNOSIS: *A. sternseptum* can be distinguished from other *Ageleradix* species by the shape of its median epigynal septum (Fig. 18), the spermathecae and the twisted copulatory bursae (Fig. 19).

DESCRIPTION: Female (holotype). Total length 6.79. Carapace length 2.99, width 2.12; abdomen length 3.80, width 2.34. AER procurved and PER strongly procurved in dorsal view. Eye measurements: AME 0.14; ALE 0.17; PME 0.13; PLE 0.15; AME-AME 0.05; AME-ALE 0.03; ALE-PLE close to each other; PME-PME 0.11; PME-PLE 0.07; MOA-L 0.45; MOA-WA 0.31; MOA-WP 0.36. Carapace brown, covered with white and brown plumose hairs. Head region clearly narrower than thorax region. Cervical groove and radial grooves black. Fovea longitudinal, long. Chelicerae red-brown, with 3 promarginal and 3 retromarginal teeth (Fig. 24). Maxillae and labium brown, labium much longer than wide. Sternum gray, covered with white plumose hairs, its distal end slightly rounded, not very sharp. Legs yellow-brown, with annuli on femora, patellae, tibiae and distal end of metatarsi. Leg formula (from longest to shortest): IV, I, II = III; leg measurements: I: 8.00 (2.27 + 2.64 + 1.82 + 1.27); II: 7.81 (2.18 + 2.72 + 1.82 + 1.09); III: 7.81 (2.18 + 2.45 + 2.00 + 1.18); IV: 10.54 (2.91 + 3.27 + 2.91 + 1.45). Abdomen densely covered with white and brown plumose hairs. Middorsal region yellow, the rest brown. A broad brown pattern in the middle of the venter. Colulus reduced to a tiny plate covered with several setae. ALS about as long as basal segment of PLS; apical segment of PLS as long as basal segment. Epigynum (Figs 18-19) with large, shield-like median septum, posteriorly much wider than anteriorly, and with two posterior depressions. Genital atria situated anteriorly of median septum, giving the appearance of two nostrils. Spermathecae pear-shaped and widely separated from each other; copulatory bursae strongly twisted.

Male. Unknown.

DISTRIBUTION: China: Yunnan (Map 1).

Ageleradix zhishengi sp. n. Figs 20-23

Agelena cymbiforma Wang, 1991: 408, figs 11-13 (misidentification of male). – Song, Zhu & Chen, 1999: 353, figs 206G, Q.

Ageleradix cymbiforma. – Xu & Li 2007: 60. (only male)

HOLOTYPE ♂ (HBI): Mt Xishan, Kunming City (25.0° N, 102.7° E), Yunnan Province, China, collected by Jiafu Wang, 30 July 1987 (male paratype of *Agelena cymbiforma* Wang, 1991).

ETYMOLOGY: The new species is named in honor of Dr Zhisheng Zhang for his contribution to the current paper. Specimens collected by his colleague made us aware of the incorrect match of male and female in the original description of *Agelena cymbiforma*. He also confirmed the match of male and female in *Ageleradix schwendingeri* sp. n.

DIAGNOSIS: This species can be recognized by a short, sharply pointed embolus, a strong, boat-shaped conductor, and a torch-like, distally serrated radix in males (Figs 20-22).

DESCRIPTION: Male (holotype). Total length 5.50; carapace length 2.70 width 2.10; abdomen length 3.00, width 1.60. Eye measurements: AME 0.11; ALE 0.18; PME 0.15; PLE 0.18; AME-AME 0.06; AME-ALE 0.06; ALE-PLE 0.04; PME-PME 0.12; PME-PLE 0.09; MOA-L 0.45; MOA-WA 0.32; MOA-WP 0.42. Leg measurements: I: 11.64 (2.94 + 3.78 + 3.00 + 1.92); II: 9.84 (2.52 + 3.36 + 2.64 + 1.32); III: 9.72 (2.70 + 3.00 + 2.82 + 1.20); IV: 14.64 (3.66 + 4.74 + 4.26 + 1.98). Promargin and retromargin of each chelicera with 3 teeth (Fig. 23). Palp (Figs 20-22) without patellar apophysis; retrolateral tibial apophysis relatively distinct; tegulum with 2 processes; conductor boat-shaped, long and strong; embolus originating subapically, needle-shaped; radix long and broad, torch-like, with a serrate membranous distal edge; median apophysis wide, membranous.

DISTRIBUTION: China: Yunnan (Map 1).

REMARK: 3 ♀ and 2 ♂ of this species, collected by Zizhong Yang at Xiaguan near Dali City, Yunnan Province, China on 28 March 2003, are deposited in the Dali University and were examined by Zhisheng Zhang. They show that the female holotype and the male paratype of *A. cymbiforma* are not conspecific. *Ageleradix zhishengi* sp. n. appears to be a common species in that area.

Benoitia agraulosa (Wang & Wang, 1990) Figs 24-29

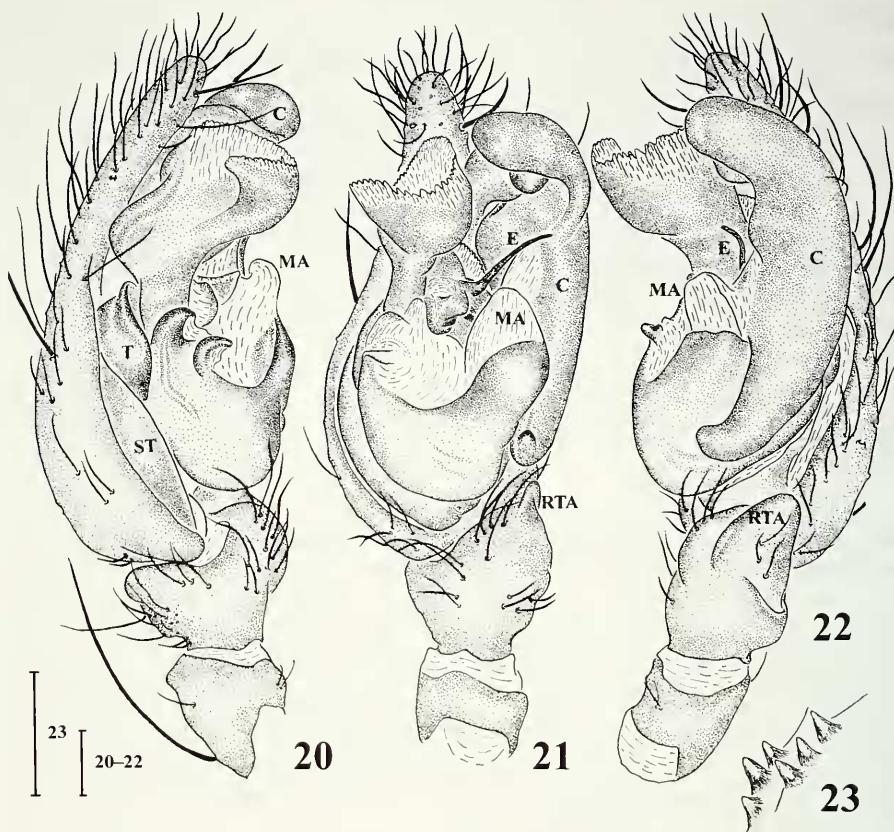
Agelena agraulosa Wang & Wang, 1990: 40, figs 1-5. – Wang, 1997: 254, figs 11-15;

Benoitia agraulosa. – Song, Zhu & Chen, 1999: 355, figs 207K-L, M-N (transferred from *Agelena*, following comments by Wang, 1997).

TYPE MATERIAL EXAMINED: ♀ holotype (IZCAS); Jiayuguan Great Wall, Jiayuguan City (39.8° N, 98.3° E), Gansu Province, China, collected by Xinping Wang and Xinai Hu, 26 July 1988. – Paratypes, 1 ♂ and 2 ♀ (IZCAS), same data as for the holotype.

OTHER MATERIAL EXAMINED: 1 ♀ (MHNG), Mt Baitashan, Qitai County (44.1° N, 89.8° E), Xinjiang, China, collector and date unknown.

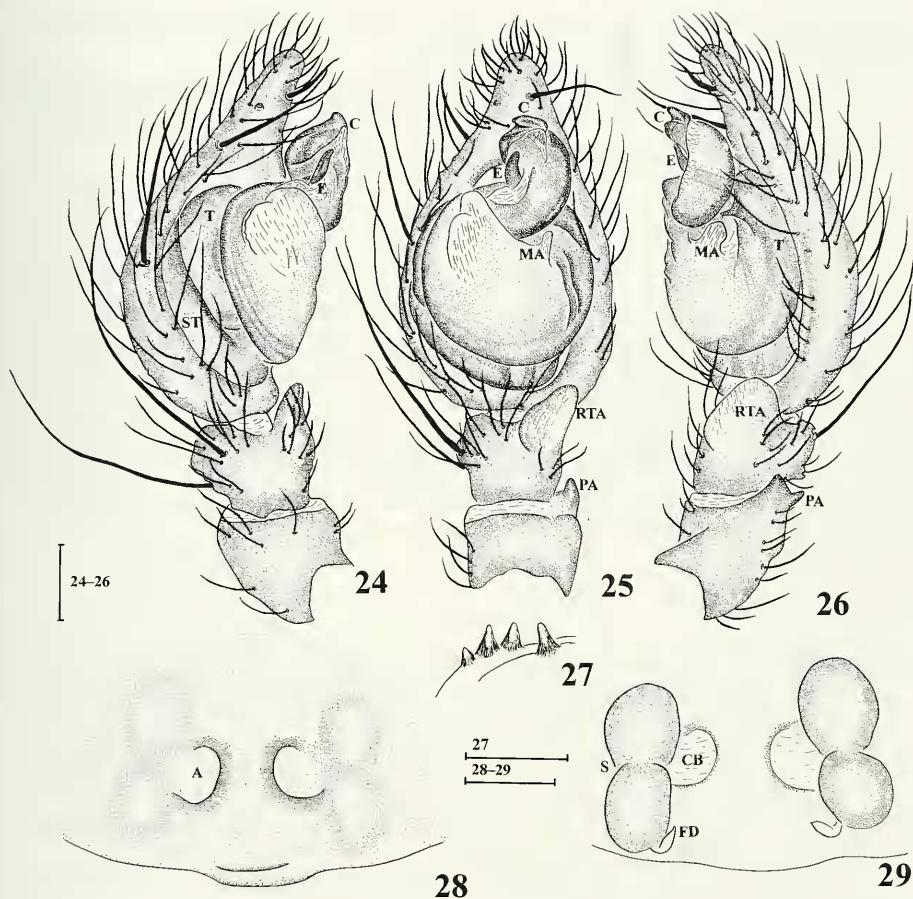
DIAGNOSIS: *B. agraulosa* can be distinguished from other *Benoitia* species by the shape of conductor and embolus in males (Figs 24-26), and by the small separated epigynal openings and medially constricted spermathecae in females (Figs 28-29).



FIGS 20-23

Ageleradix zhishengi sp. n. (20-22) Palp of male, left side. (20) Prolateral view. (21) Ventral view. (22) Retrolateral view. (23) Cheliceral teeth of male, left side. Scale bars: 0.2 mm.

DESCRIPTION: Female (holotype). Total length 10.00; carapace length 4.19, width 2.58; abdomen length 5.97, width 3.55. AER and PER procurved in frontal view. Eye measurements: AME 0.18; ALE 0.12; PME 0.12; PLE 0.18; AME-AME 0.06; AME-ALE 0.06; ALE-PLE 0.06; PME-PME 0.12; PME-PLE 0.12; MOA-L 0.45; MOA-WA 0.42; MOA-WP 0.39. Carapace yellow-brown, with black-brown spots. Several long hairs in MOA and some between PME and thoracic groove. Clypeus covered with white plumose hairs. Chelicerae red-brown, each with 3 promarginal teeth and 1 retromarginal tooth. Maxillae, sternum and legs yellow-brown, maxillae much longer than wide. Labium brown. Sternum slightly longer than wide and covered with quite long hairs. Legs with a stripe on their ventral side. Leg formula (from longest to shortest): IV, I, III, II; leg measurements: I: 12.70 (3.17 + 4.92 + 2.86 + 1.75); II: 10.32 (2.86 + 3.93 + 2.54 + 1.59); III: 11.75 (2.86 + 4.76 + 2.38 + 1.75); IV: 13.81 (3.97 + 4.44 + 4.13 + 1.27). Dorsal side of abdomen brown, clothed with several pairs of black and silvery white spots. Lateral sides of abdomen brown. Epigynum with



FIGS 24-29

Benoitia agraulosa (Wang & Wang). (24-26) Palp of male, left side. (24) Prolateral view. (25) Ventral view. (26) Retrolateral view. (27) Cheliceral teeth of male, left side. (28-29) Female genitalia. (28) Epigynum, ventral view. (29) Vulva, dorsal view. Scale bars: 0.2 mm.

two relatively small openings, these clearly separated from each other. Wide, depressed septum lying between finely sclerotized rims of epigynal openings. Copulatory bursae bordered by long, medially constricted spermathecae (Figs 28-29).

Male (paratype). Total length 8.87; carapace length 4.03, width 2.10; abdomen length 5.00 width 2.26. Eye measurements: AME 0.15; ALE 0.18; PME 0.15; PLE 0.15; AME-AME 0.07; AME-ALE 0.03; ALE-PLE 0.06; PME-PME 0.15; PME-PLE 0.15; MOA-L 0.51; MOA-WA 0.42; MOA-WP 0.39. Leg measurements: I: 11.94 (3.00 + 3.54 + 3.72 + 1.68); II: 11.16 (2.88 + 3.60 + 3.06 + 1.62); III: 11.52 (3.00 + 3.78 + 3.06 + 1.68); IV: 14.54 (4.02 + 4.50 + 4.92 + 1.10). Each chelicera with 3 promarginal teeth and 1 retromarginal tooth (Fig. 27). Palp (Figs 24-26) with large retrolateral tibial apophysis; patellar apophysis with two distal ends; corkscrew-shaped conductor

with sclerotised and membranaceous structures describing one whorl; embolus short, with blunt tip; median apophysis thumb-shaped.

VARIATION: The total length in females examined ($n = 4$) varies from 9.90 to 11.58.

DISTRIBUTION: China: Gansu, Xinjiang (Map 1).

ACKNOWLEDGEMENTS

The manuscript benefited greatly from comments by Dr Xinpeng Wang (University of Florida, USA), Dr Zhisheng Zhang (Southwest University, China), two anonymous referees and the editors. This study was supported by the National Natural Sciences Foundation of China (NSFC-30670239/30770268), by the National Science Fund for Fostering Talents in Basic Research (Special subjects in animal taxonomy, NSFC-J0630964/J0109), by the Knowledge Innovation Program of the Chinese Academy of Sciences (KSCX2-YW-Z-008/KSCX3-IOZ-0614), by the Ministry of Science and Technology of the People's Republic of China (MOST grant no. 2006FY120100/2006FY110500) and partly also by the Beijing Natural Science Foundation (6052017).

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